



PARTIAL TRANSLATION OF
INUI ET AL. (Japanese Patent Publication HEI 9-243283)

[0008]

Fig. 10 shows an example of welding operation for forming on the inside of the tube with projections 2 as beads by powder plasma arc welding. A tube 1 is horizontally supported by a rotary drive apparatus (not shown) and rotatable about its axis x. A welding torch 4 is fixed via arm 5 to a welding torch supporting member 6. A plurality of the welding torches 4 can be installed on the welding torch supporting member 6, if desired. The welding torch supporting member 6 is in parallel to the tube axis x and movable in the direction of the tube axis by a drive apparatus (not shown). Indicated at 7 is a pipe for supplying the welding torch 4 with powder welding materials.

[0009]

Fig. 6 shows a heat exchange tube having a distribution pattern wherein projections 2 are dispersed on the row in a straight line in parallel to the tube axis x. This pattern is prepared by moving the welding torch 4 in the direction of the tube axis to form intermittent weld beads on the inside surface 13 and repeating this operation at a plurality of places in the circumferential direction of the tube.

Fig. 7 shows a heat exchange tube having a distribution pattern wherein projections 2 are dispersed on the wavy row. This pattern is prepared by applying on the welding torch 4 a swing action in the direction orthogonal to the moving direction of the welding torch 4.

[0010]

Fig. 8 shows a heat exchange tube having a distribution pattern wherein projections 2 are dispersed on the row in a straight line orthogonal to the tube axis x. This pattern is prepared by rotating the tube 1 around its axis x to form intermittent weld beads in the circumferential direction of the tube 1 using the weld torch 4.

Fig. 9 shows a heat exchange tube having a distribution pattern wherein projections 2 are dispersed on the row in a straight line extending helically on the inside surface 13 of the tube 1. This pattern is prepared by both the rotation of the tube 1 and the movement of the welding torch 4 in the direction of the tube axis x to form intermittent weld beads.